REMARKS

Claims 1-28 have been examined. New claims 29-34 have been added to further describe the patentable features of the present invention. Claims 2 and 9 have been canceled without prejudice or disclaimer. Applicants reserve the right to pursue claims 2 and 9 in a divisional or continuation application.

Applicants thank the Examiner for indicating that claims 25-27 contain allowable subject matter and would be allowable if rewritten in independent form included all the limitations of the base claim and any intervening claims. Thus, claim 25 has been rewritten in independent form and incorporates the features of claims 1, 2, 4 and 5. Applicants submit that at least claims 25-27 should be in a condition for allowance.

I.   **Claim Rejections - 35 U.S.C. § 102**

Claims 1-24 and 28 stand rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Gruhl et al. (US Pub. No. 2002/0004379). Applicants traverse the rejections based on the following comments.

A.   **Claims 1, 8 and 13**

Claim 1, as amended, recites:

> A system for efficient uplink signaling to support closed loop capacity scheduling between a base station and a mobile station both of which carry out a plurality of data flows different in priority and QoS from one another,
> the mobile station assigning an uplink capacity for the data flows in accordance with the steps of:
> preparing combinations of capacities concerned with combinations of the data flows;
> modifying the combinations of the capacities into modified combinations of capacities; and
> determining the uplink capacity on the basis of the modified combinations of capacities,
> wherein the modifying step comprises the steps of:

> dividing the data flows with reference to the priority and QoS into a plurality of groups; and
> individually pointing to the plurality of groups by sub pointers to obtain the modified combinations of capacities.

The Examiner asserts on page 4-5 of the Office Action that in a manner of distinguishing various services, traffic types, flows, QoS, etc., pointers and sub pointers would inherently exist in order for the network entities and controllers to make the distinction between traffic types. However, Gruhl fails to disclose "dividing the data flows with reference to the priority and QoS into a plurality of groups; and individually pointing to the plurality of groups by sub pointers to obtain the modified combinations of capacities." Gruhl does not disclose multiple sub pointers which individually point to a plurality of groups as suggested by the Examiner. Nor is it inherent from the disclosure of Gruhl. Nothing in Gruhl suggests how multiple sub pointers would be applied to the invention thereof.

For example, with respect to serving each of the data flows, scheduler 80 does so depending on each flows QoS requirements (paragraph 68). It is well known in the art that a Quality of service is the ability to provide different priority to different applications, users, or data flows, or to guarantee a certain level of performance to a data flow. Thus, a Connection Admission Controller 70 generates a flow queue and the scheduler 80 serves each flow based the QoS requirements (i.e., priority) thereof (paragraphs 67-68). Therefore, higher priority flows in the queue are served first. That is, the scheduler 80 only serves each flow on an individual basis based on the flow's QoS requirements. Nothing in Gruhl fairly suggests using more than one pointer, and specifically, multiple sub pointers to serve the flow queue. There Examiner asserts that Gruhl discloses that all data flows are handled separately (paragraph 47) and that this suggest using multiple sub pointers. However, there is nothing in Gruhl that suggests that this is

not accomplished by a single pointer, which points to each flow to handle each data flow

separately.

Under the doctrine of "inherency," if an element is not expressly disclosed in a prior art

reference, the reference will still be deemed to anticipate a subsequent claim if the missing

element "is necessarily present in the thing described in the reference" *Cont'l Can Co. v.*

Monsanto Co., 948 F.2d 1264, 1268, 20 U.S.P.Q.2d 1746, 1749 (Fed. Cir. 1991). "Inherent

anticipation requires that the missing descriptive material is **'necessarily present,' not merely**

probably or possibly present, in the prior art." (emphasis added) *Trintec Indus., Inc. v. Top-*

U.S.A. Corp., 295 F.3d 1292, 1295, 63 U.S.P.Q.2d 1597, 1599 (Fed. Cir. 2002); see also MPEP §

2112. As stated above, nothing in Gruhl discloses that using more than one pointer, and

specifically, multiple sub pointers to serve the flow queue is **necessarily present**. Gruhl fails to

disclose that how sub pointers would be used in the reference or that they are even necessary.

Applicants submit that Gruhl at best discloses that a <u>single pointer</u> is used for the flow queue

being served.

Applicants point the Examiner to a recent case, in which the Federal Circuit held that the

prior art reference—in order to anticipate under 35 U.S.C. § 102—must not only disclose all

elements of the claim within the four corners of the document, but <u>must also disclose those</u>

<u>elements "arranged as in the claim."</u> *Net Moneyin, Inc. v. Verisign, Inc.*, No. 2007-1565 (Fed.

Cir. 10/20/2008) (Fed. Cir., 2008). Focusing for a moment on *arrangement* – to anticipate, the

reference must teach "all of the limitations arranged or combined in the same way as recited in

the claim." *Net Moneyin, Inc. v. Verisign, Inc.*, (Fed. Cir., 2008). Gruhl simply does not teach

the arrangement of claim 1, in which the data flows are divided with reference to the priority and

QoS into a plurality of groups and the groups are <u>pointed to individually by sub pointers to obtain the modified combination of capacities</u>.

In view of the above, Gruhl fails to disclose or fairly suggest each and every feature of claim 1. Therefore, claim 1 is patentable for at least this reason.

Claims 8 and 13 include analogous, though not necessarily coextensive features recited in claim 1, and therefore, claims 8 and 13 are patentable for the reasons discussed for claim 1.

B.   Claim 21

Claim 21, as amended, recites that "a change of capacity of the first or second group does not <u>impact</u> a capacity of the other group." Gruhl discloses a system which controls the admission of new flows to the system (paragraph 6). In particular, Gruhl discloses that the main goal of the Connection Admission Controller (CAC) 70 is to admit a maximum number of Connection Requests, and, at the same time, maintain the QoS requirements of existing connections (paragraph 73). That is, the QoS requirements set by a user for each existing connection or data flow must remain at an acceptable level in lieu of an addition of a new data flow, before the new data flow is admitted into the queue (paragraph 6, 27 and 64). Thus, the network makes a decision whether to accept or reject a request, depending on (1) whether sufficient capacity is available to provide the service (i.e., based on a first descriptor) and (2) whether supplying the requested service will affect current connections to an acceptable degree (i.e., based on a second descriptor) (paragraph 64).

Gruhl implies that there will be at least some impact on all the existing data flows by the addition of a new data flow (paragraph 82). However, the new data flow will be admitted as long as the impact on the existing data flows does not fall to an unacceptable level (paragraphs 64, 72 and 73). Such load balancing is required because the new high valued data flow will

borrow bandwidth from lower valued service (paragraphs 26 and 65). Thus, there is at least

some impact between data flows, and more specifically, between "groups." The Examiner

asserts with respect to claim 19 that Gruhl discloses a first group which is of higher priority and a

second group which is of lower priority. Gruhl clearly discloses that the allocation of capacity in

a high priority data flow will impact all data flows, and especially low priority data flows, and

vice versa. Thus, Gruhl does not disclose that "a change of capacity of the first or second group

does not <u>impact</u> a capacity of the other group."

 Applicants submit that claim 21 is patentable for at least these reasons.

C. **Claims 16-18**

Claim 16 recites:

> A method of control signal transmission for supporting a closed-loop
> capacity scheduling method used in a system comprising a mobile station capable
> of transmitting a plurality of data flows to a base station, any one of a plurality of
> priority levels being assigned to each of the data flows, wherein
> <u>the mobile station transmits to the base station a provisional scheduling
> information</u> which is given by dividing the data flows into groups on the basis of
> the priority levels of each of the data flows and <u>by producing the provisional
> scheduling information based on a buffer accumulation amount of the data flows
> of each group,</u>
> the base station determines an assigned capacity for the data flow <u>on the
> basis of the provisional scheduling information,</u>
> the base station notifies to the mobile station the assigned capacity and
> information designating the data flow, and
> the mobile station transmits the data flow on the basis of the received
> assigned capacity. (emphasis added)

 Applicants submit that the technique disclosed in Gruhl is fundamentally linked to

Downlink Packet Scheduling. On the other hand, the claims 16-18 relates to Uplink Packet

Scheduling.

In a case of Downlink Packet Scheduling, a base station has <u>downlink buffers</u> for all of

mobile stations with which the base station has a connection. Referring to the downlink buffers

of the base station, the base station carries out <u>packet scheduling</u> by grasping the situation of

each of the mobile stations (Figs. 5 and 9 of Gruhl).

In a different case of Uplink Packet Scheduling, each of the mobile stations has an <u>uplink</u>

<u>buffer</u> for the mobile station itself. The base station controls transmission of each of the mobile

stations in the manner provided by the invention according to claim 16 of this application. In

order for the base station to control the transmission of each of the mobile stations, the base

station receives "a provisional scheduling information" which the mobile station transmits to the

base station and which is described in claim 16 of this application.

The invention according to claim 16 of this application achieves Uplink Packet

Scheduling when the mobile station has a plurality of data flows and is capable of transmitting a

plurality of data flows to a base station. The invention according to claim 16 of this application

also achieves, in the Uplink Packet Scheduling, transmission control of each of the data flows

and optimization of the control signal necessary for transmission control of each of the data

flows. The optimization of the control signal necessary for transmission control of each of the

data flows is a problem <u>specific to Uplink Packet Scheduling and is not necessary in Downlink</u>

<u>Packet Scheduling</u>. Thus, a person of ordinary skill in the art would readily understand that

Gruhl, which is linked to Downlink Packet Scheduling, does not disclose the features of claim 16

which specifically address the optimization of the control signal necessary for transmission

control of each of the data flows specific to Uplink Packet Scheduling. Instead, Gruhl discloses

a Call Admission Control (Claim 1 and Fig. 8) in a mobile telecommunications network.

In view of the above, Gruhl fails to disclose each and every feature of claim 16, and thus, claim 16 is patentable for at least this reason.

Additionally, claims 17 and 18 are patentable at least by virtue of their dependency on claim 16.

D.   Remaining claims

Applicants submit that the remaining claims are patentable at least by virtue of their respective dependencies.

II.   New Claims

By this Amendment, Applicants have added new claims 29-34 to further define the claimed invention. Applicants respectfully submit claims 29-34 recite additional features which are not taught or suggested by the prior art of record.

III.   Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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